

## Early History of Quantum Mechanics

1897	J.J. Thomson discovers electron
1900	Max Planck explains blackbody radiation via quantized energy, $E = nh\nu$
1905	Albert Einstein explains photoelectric effect, $KE_{\max} = h\nu - \phi$ , light consists of quanta, $E = h\nu$
1911	Ernest Rutherford discovers nucleus
1913	Bohr introduces nuclear model, $\ell = n\hbar$
1914	Frank-Hertz confirm stationary states
1915	Einstein publishes new theory of gravitation (General Relativity)
1919	Bending of light confirmed, Sir Arthur Eddington
1923	Arthur Compton verifies light (X-rays) wavelike, $\Delta\lambda = \frac{h}{mc}(1 - \cos\theta)$
1924	Louis deBroglie proposes matter is wavelike, $\lambda = \frac{h}{mv}$
1925	Wolfgang Pauli introduces exclusion Principle
1925	Werner Heisenberg, Max Born, Pasqual Jordan develop quantum mechanics
1926	Erwin Schrodinger develops wave mechanics
1927	Werner Heisenberg introduces the Uncertainty Principle
1928	P.A.M. Dirac derives relativistic quantum theory
1931	P.A.M. proposes antimatter, positron
1932	Anderson discovers antimatter, positron
1932	James Chadwick discovers neutron

### Nobel Prizes in Physics

2010	2004	David J. Gross	1999	Martinus J.G. Veltman	1992	Georges Charpak	
2010	2004	H. David Politzer	1998	Robert B. Laughlin	1991	Pierre-Gilles de Gennes	
2010	2004	Frank Wilczek	1998	Horst L. Störmer	1990	Jerome I. Friedman	
2009	Charles K. Kao	2003	Alexei A. Abrikosov	1998	Daniel C. Tsui	1990	Henry W. Kendall
2009	Willard S. Boyle	2003	Vitaly L. Ginzburg	1997	Steven Chu	1990	Richard E. Taylor
2009	George E. Smith	2003	Anthony J. Leggett	1997	Claude Cohen-Tannoudji	1989	Norman F. Ramsey
2008	Yoichiro Nambu	2002	Raymond Davis Jr.	1997	William D. Phillips	1989	Hans G. Dehmelt
2008	Makoto Kobayashi	2002	Masatoshi Koshiba	1996	David Lee	1989	Wolfgang Paul
2008	Toshihide Maskawa	2002	Riccardo Giacconi	1996	Douglas Osheroff	1988	Leon M. Lederman
2007	Albert Fert	2001	Eric A. Cornell	1996	Robert Richardson	1988	Melvin Schwartz
2007	Peter Grünberg	2001	Wolfgang Ketterle	1995	Frederick Reines	1988	Jack Steinberger
2006	John C. Mather	2001	Carl E. Wieman	1995	Martin Perl	1987	J. Georg Bednorz
2006	George F. Smoot	2000	Zhores I. Alferov	1994	Bertran N. Brockhouse	1987	K. Alexander Müller
2005	Roy J. Glauber	2000	Herbert Kroemer	1994	Clifford G. Schull	1986	Ernst Ruska
2005	John L. Hall	2000	Jack S. Kilby	1993	Russell Hulse	1986	Gerd Binnig
2005	Theodor W. Hänsch	1999	Gerardus 't Hooft	1993	Joseph Taylor	1986	Heinrich Rohrer

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1985	Klaus von Klitzing	1971	Dennis Gabor	1954	Walther Wilhelm Georg Bothe	1927	Charles Thomson Rees Wilson
1984	Carlo Rubbia	1970	Hannes Olof Gosta Alfven	1953	Frits Zernike	1926	Jean Baptiste Perrin
1984	Simon van der Meer	1970	Louis Eugene Felix Neel	1952	<b>Felix Bloch</b>	1925	<b>James Franck</b>
1983	Subrahmanyan Chandrasekhar	1969	Murray Gell-Mann	1952	Edward Mills Purcell	1925	<b>Gustav Ludwig Hertz</b>
1983	William A. Fowler	1968	Luis Walter Alvarez	1951	Sir John Douglas Cockcroft	1924	Karl Manne Georg Siegbahn
1982	Kenneth G. Wilson	1967	Hans Albrecht Bethe	1951	Ernest Thomas Sinton Walton	1923	<b>Robert Andrews Millikan</b>
1981	Nicolaas Bloembergen	1966	Alfred Kastler	1950	Cecil Frank Powell	1922	<b>Niels Henrik David Bohr</b>
1981	Arthur L. Schawlow	1965	Richard Phillips Feynman	1949	<b>Hideki Yukawa</b>	1921	<b>Albert Einstein</b>
1981	Kai M. Siegbahn	1965	Julian Seymour Schwinger	1948	Patrick Maynard Stuart Blackett	1920	Charles Eduard Guillaume
1980	James Watson Cronin	1965	Sin-Itiro Tomonaga	1947	Sir Edward Victor Appleton	1919	<b>Johannes Stark</b>
1980	Val Logsdon Fitch	1964	Nikolai Gennadievich Basov	1946	Percy Williams Bridgman	1918	<b>Max Karl Ernst Ludwig Planck</b>
1979	Sheldon Lee Glashow	1964	Alexander Mikhailovich Prokhorov	1945	Wolfgang Ernst Pauli	1917	Charles Glover Barkla
1979	Steven Weinberg	1964	Charles Hard Townes	1944	Isidor Isaac Rabi	1916	None
1979	Abdus Salam	1963	Johannes Hans Daniel Jensen	1943	<b>Otto Stern</b>	1915	<b>Sir William Henry Bragg</b>
1978	Pyotr Leonidovich Kapitsa	1963	Maria Goeppert-Mayer	1942	None	1915	<b>Sir William Lawrence Bragg</b>
1978	Arno Allan Penzias	1963	Eugene Paul Wigner	1941	None	1914	Max Theodor Felix von Laue
1978	Robert Woodrow Wilson	1962	Lev Davidovich Landau	1940	None	1913	Heike Kamerlingh Onnes
1977	Phillip Warren Anderson	1961	Robert Hofstadter	1939	<b>Ernest Orlando Lawrence</b>	1912	Nils Gustaf Dalen
1977	John Hasbrouck Van Vleck	1961	Rudolf Ludwig Moessbauer	1938	<b>Enrico Fermi</b>	1911	<b>Wilhelm Wien</b>
1977	Sir Nevill Francis Mott	1960	Donald Arthur Glaser	1937	<b>Clinton Joseph Davisson</b>	1910	Johannes Diderik Van der Waals
1976	Burton Richter	1959	Owen Chamberlain	1937	Sir George Paget Thomson	1909	Karl Ferdinand Braun
1976	Samuel Chao Chung Ting	1959	Emilio Gino Segre	1936	<b>Carl David Anderson</b>	1909	Guglielmo Marconi
1975	Aage Niels Bohr	1958	Pavel Alekseyevich Cherenkov	1936	Victor Franz Hess	1908	Gabriel Jonas Lippmann
1975	Benjamin Roy Mottelson	1958	Ilya Mikhailovich Frank	1935	<b>Sir James Chadwick</b>	1907	<b>Albert Abraham Michelson</b>
1975	Leo James Rainwater	1958	Igor Evgenevich Tamm	1934	None	1906	<b>Sir Joseph John Thomson</b>
1974	Antony Hewish	1957	Tsung-dao Lee	1933	<b>Paul Adrien Maurice Dirac</b>	1905	<b>Philipp Eduard Anton Lenard</b>
1974	Sir Martin Ryle	1957	Chen Ning Yang	1933	<b>Erwin Schrödinger</b>	1904	<b>John William Strutt (Lord Rayleigh)</b>
1973	Leo Esaki	1956	John Bardeen	1932	<b>Werner Karl Heisenberg</b>	1903	<b>Antoine Henri Becquerel</b>
1973	Ivar Giaever	1956	Walter Houser Brattain (1)	1931	None	1903	<b>Marie Curie</b>
1973	Brian David Josephson	1956	William Bradford Shockley	1930	Sir Chandrasekhara Venkata Raman	1903	<b>Pierre Curie</b>
1972	John Bardeen	1955	Polykarp Kusch	1929	<b>Prince Louis-Victor Pierre Raymond de Broglie</b>	1902	<b>Hendrik Antoon Lorentz</b>
1972	Leon Neil Cooper	1955	<b>Willis Eugene Lamb Jr.</b>	1928	Sir Owen Willans Richardson	1902	<b>Pieter Zeeman</b>
1972	John Robert Schrieffer	1954	<b>Max Born</b>	1927	<b>Arthur Holly Compton</b>	1901	Wilhelm Conrad Roentgen